selecting a first one of the storage locations based on a first set of bits contained in the header data; and

executing an instruction contained at the first selected storage location.

2. (Amended) The method of claim 1, further comprising the step of selecting a second one of the storage locations based on the executed instruction and a second set of bits contained in the header data.

3. (Amended) The method of claim 2, further comprising the step of forwarding the network layer packet based on the contents of the second selected storage location.

4. (Amended) The method of claim 2, further comprising the step of selecting a third one of the storage locations based on contents of the second selected storage location and a third set of bits contained in the header data.

6. (Amended) In a device for forwarding an Internet Protocol (IP) packet toward a destination having a destination address containing a sequence of bits, a method comprising the steps of:

using a first set of bits from the destination address of the IP packet as an index to locate a first entry in a first forwarding lookup;

where the first entry in the first forwarding lookup provides direction to a second forwarding lookup, using a second set of bits from the destination address as an index to locate a second entry in a second forwarding lookup; and

employing contents of the second entry in forwarding the IP packet.

9. (Amended) The method of claim 6, wherein the step of employing contents of the second entry comprises identifying that a third forwarding lookup should be used in forwarding the IP packet.

-2-

10. (Amended) The method of claim 9 wherein the method further comprises the steps of employing a third set of bits from the destination address as an index to locate a third entry in the third forwarding lookup and employing the contents of the third entry in forwarding the IP packet.

12. (Amended) In a switch having a memory in a network that employs a connectionless network protocol, a method of forwarding a data packets, each having an associated destination address comprising the steps of:

providing a forwarding lookup with locations in the memory, wherein the locations are indexed by multiple bits; and

for each data packet to be forwarded, employing a first set of bits in the destination address to locate and access at least one location in the forwarding lookup to forward the data packet, wherein the number of bits in the first set of bits is less than the total number of bits in the destination address.

15. (Amended) A device for forwarding received network layer packets wherein the packets include header data, comprising:

a first lookup structure storing entries that provide instructions regarding forwarding of network layer packets, said entries being indexed by multiple bits; and

a forwarding controller for using a first set of bits from the header data of each received packet as an index to locate an entry in the first lookup structure and for executing the instruction stored at the located entry in the first lookup structure .

16. (Amended) The device of claim 15 wherein the forwarding controller includes a processor for executing instructions and wherein the entries on the first forwarding lookup structure includes instructions to be executed by the processor to provide information regarding how to forward network layer packets.

21. (Amended) A switch/router for directing IP packets toward destinations, comprising:

a first lookup array containing entries indexed by leading bits of destination addresses for IP packets, each entry containing an instruction to assist in forwarding an IP packet towards a destination;

a second lookup array containing entries indexed by a successive set of bits that follow the leading bits in the destination addresses for IP packets, each entry containing an instruction to assist in forwarding an IP packet towards a destination;

a third lookup array containing entries indexed by a set of trailing bits that follow the successive set of bits in the destination addresses for IP packets, each entry containing an instruction to assist in forwarding an IP packet; and

a forwarding engine for forwarding IP packets to destinations, wherein for each IP packet being forwarded, said forwarding engine accesses at least one entry in the lookup arrays indexed by a portion of a destination address for the IP packet being forwarded and executing the instruction contained in the entry that is accessed.

24. (Amended) In a device for forwarding data packets wherein the device includes a storage having storage locations, a computer-readable medium holding computer-executable instructions for performing a method, comprising the steps of:

using multiple bits from header data for an network layer packet as an index to locate a selected one of the storage locations that provides an instruction regarding how the device should forward the network layer packet; and

executing the instruction provided by the selected storage location to forward the network layer packet toward the destination.

REMARKS

In the Office Action dated June 4, 2002, the Examiner rejected pending claims 1-31 as unpatentable. Applicant responds to each rejection respectively in the following

-4-